

CLAIMS

We claim:

- 5           1. A method of storing data, from a markup document containing a plurality of elements and a plurality of attributes, in a relational database, said method comprising:
- 10               storing an element record for every element of said plurality of elements in an element table of said relational database, wherein each element record includes a unique element ID, and an element data set; and
- 15               storing an attribute record for every attribute of said plurality of attributes in an attribute table of said relational database, wherein said attribute record comprises an attribute data set for one attribute and an element ID of an element to which the one
- 20               attribute is assigned.
2. The method of Claim 1 wherein said element data set includes character data.
- 25           3. The method of Claim 1 wherein said element data set contains a parent element ID.
4. The method of Claim 2 wherein said element data set contains a parent element ID.
- 30           5. The method of Claims 1 wherein said element data set includes an element name.
6. The method Claim 1 further comprising:
- 35               storing, for every unique element name of the plurality of elements, an element name record

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including an element name and a corresponding unique element name ID in an element name table of said relational database.

5 7. The method of Claim 1 comprising:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

10 8. The method of Claim 1 wherein said attribute data set includes an attribute name.

15 9. The method of Claim 1 wherein said attribute data set includes an attribute value.

20 10. The method of Claim 8 wherein said attribute data set includes an attribute value.

11. The method of Claim 1 wherein the markup document is an XML document.

25 12. A method of storing data, from a markup document containing a plurality of elements and a plurality of attributes, in a relational database, said method comprising:

storing an element record for every element of said plurality of elements in an element table of said relational database, wherein each element record includes a unique element ID, and an element data set;

30 storing an attribute record for every attribute of said plurality of attributes in an attribute table of said relational database, wherein said attribute record comprises an

attribute data set for one attribute and an  
element ID of an element to which the one  
attribute is assigned;

5 storing, for every unique element name of the  
plurality of elements, an element name record  
including an element name and a corresponding  
unique element name ID in an element name table of  
said relational database; and

10 storing, for every unique attribute name of  
the plurality of attributes, an attribute name  
record including an attribute name and a  
corresponding unique attribute name ID in an  
attribute name table of said relational database.

15 13. The method of Claim 12 wherein said element  
data set includes character data.

20 14. The method of Claim 12 wherein said element  
data set contains a parent element ID.

15 15. The method of Claim 14 wherein said element  
data set contains a parent element ID.

25 16. A memory data structure comprising:  
an element table wherein said element table  
is configured to store a plurality of element  
records corresponding to a plurality of elements  
of a markup document, and further wherein each  
element record includes an assigned element ID  
30 field and an element data set field; and

an attribute table wherein said attribute  
table is configured to store a plurality of  
attribute records corresponding to a plurality of  
attributes of said markup document, and further  
35 wherein each attribute data record includes an  
element ID field and an attribute data set.

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17. The data structure of Claim 16 wherein the element data set includes a character data field.

5 18. The data structure of Claim 16 wherein the element data set includes a parent element ID field.

10 19. The data structure of Claims 16 wherein the element data set includes an element number field.

20 20. The data structure of Claim 17 wherein said element data set includes an element name field.

15 21. The data structure of Claims 16 wherein the element data set comprises an element name ID field.

22. The data structure of Claim 21 further comprising:

20 an element name table wherein said element name table is configured to store a plurality of element name records, and further wherein each element name record includes an element name ID field and a corresponding element name field.

25 23. The data structure of Claim 16 wherein said attribute data set includes an attribute name and an attribute value.

30 24. The data structure of Claim 16 wherein said attribute data set contains an attribute name ID.

25. The data structure of Claim 24 further comprising:

35 an attribute name table wherein said attribute name table is configured to store a plurality of attribute name records wherein each

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attribute name record includes an attribute name  
ID field and a corresponding attribute name field.

26. A computer program product having stored  
5 thereon a module for transferring data from a markup  
document into a relational database wherein execution  
of said module generates a method comprising:  
storing an element record for every element  
10 of a plurality of elements of said markup document  
in an element table of said relational database,  
wherein each element record includes a unique  
element ID, and an element data set; and  
storing an attribute record for every  
15 attribute of a plurality of attributes of said  
markup document in an attribute table of said  
relational database, wherein said attribute record  
comprises an attribute data set for one attribute  
and an element ID of an element to which the one  
attribute is assigned.

27. The computer program product of Claim 26  
wherein said method further comprises:  
storing, for every unique element name of the  
25 plurality of elements, an element name record  
including an element name and a corresponding  
unique element name ID in an element name table of  
said relational database.

28. The computer program product of Claim 26  
30 wherein said method further comprises:  
storing, for every unique attribute name of  
the plurality of attributes, an attribute name  
record including an attribute name and a  
corresponding unique attribute name ID in an  
35 attribute name table of said relational database.

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29. The computer program product of Claim 27 wherein said method further comprises:

storing, for every unique attribute name of the plurality of attributes, an attribute name record including an attribute name and a corresponding unique attribute name ID in an attribute name table of said relational database.

30. A computer system comprising:

a memory having stored therein a module for transferring data from a markup document into a relational database;

a processor coupled to said memory wherein execution of said module by said processor generates a method comprising:

storing an element record for every element of a plurality of elements of said markup document in an element table of said relational database, wherein each element record includes a unique element ID, and an element data set; and

storing an attribute record for every attribute of a plurality of attributes of said markup document in an attribute table of said relational database, wherein said attribute record comprises an attribute data set for one attribute and an element ID of an element to which the one attribute is assigned.

31. The computer system of Claim 30 wherein said method further comprises:

storing, for every unique element name of the plurality of elements, an element name record including an element name and a corresponding

unique element name ID in an element name table of  
said relational database.

32. The computer system of Claim 30 wherein said  
5 method further comprises:

storing, for every unique attribute name of  
the plurality of attributes, an attribute name  
record including an attribute name and a  
corresponding unique attribute name ID in an  
10 attribute name table of said relational database.

33. The computer system of Claim 31 wherein said  
method further comprises:

storing, for every unique attribute name of  
15 the plurality of attributes, an attribute name  
record including an attribute name and a  
corresponding unique attribute name ID in an  
attribute name table of said relational database.

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